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VOL. 18 No. 17

April 26, 1968

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Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 18 April 26, 1968 Number 17

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM damage severe to many crops in Idaho; damaging in other States. (p. 325).

ALFALFA WEEVIL larvae heavy in Oktibbeha County, Mississippi, and southeast Missouri; active in other States. (p. 328). PEA APHID damage severe in Kansas; reported from other States. (p. 329).

GREEN PEACH APHID severe on tobacco in Polk County, Florida. (p. 330).

IMPORTED CABBAGEWORM heavy on commercial cabbage in Blount County, Alabama. (p. 331).

RED-BANDED LEAF ROLLER and APPLE GRAIN APHID increasing at Vincennes, Indiana. (pp. 332-333).

ENGRAVER BEETLES destructive in first quarter of 1968 in eastern Texas. (p. 335).

ARMYWORM light trap collections high in Missouri, Mississippi, and Texas. (p. 341).

Detection

New State records include PEAR SAWFLY in Maryland (p. 333) and an OEDEMERID BEETLE in Delaware (p. 340).

For new county and parish records see page 340.

Prediction

PAINTED LADY flights in 1968 may be heaviest of century; potential hazard to crops in Pacific Northwest and in midwestern and central United States. For special report see page 325.

Special Reports

● Detection Reminder - Three Important Pests of Small Grains (p. 342).

Cereal Leaf Beetle Infestation and Oat Crop Loss Survey - 1967 (pp. 343-348).

Insects Not Known to Occur in the United States
Arrowhead Scale (*Unaspis yanonensis* (Kuwana)). (pp. 349-350).

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WEATHER BUREAU'S 30-DAY OUTLOOK

MID-APRIL TO MID-MAY 1968

The Weather Bureau's 30-day outlook is for temperatures to average above seasonal normals over the eastern half of the Nation and below normal over the western third. Near normal temperatures are indicated for the intermediate area. Precipitation is expected to exceed normal over the Midwest, the northern Plains and the Great Basin. Subnormal precipitation is indicated for the middle and north Atlantic Coastal States and also the central and southern Rocky Mountains. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 22

HIGHLIGHTS: Winter returned to the West as gradual warming occurred over the East. Severe storms occurred from Wisconsin to Texas.

PRECIPITATION: Rain fell along the Washington and Oregon coast early in the week with snow in the Cascades. By midweek, snow had blanketed a large area extending from Nevada to Wyoming and southward to Arizona and New Mexico. Lander, Wyoming, measured 11 inches on Wednesday afternoon and by Friday 7 inches covered the ground at Flagstaff, Arizona. Thunderstorms began forming early in the week in the humid gulf air which flowed northward over the Great Plains as it met the colder, drier air which plunged southward. Some of the thunderstorms were accompanied by damaging winds and hail. Tornadoes occurred late Tuesday in Oklahoma, Kansas, Missouri, and Iowa. More thunderstorms broke out in Oklahoma and Texas on Thursday. By Friday the violent weather had spread to other States. A tornado at Greenwood, Arkansas, killed 14 persons, injured 270, destroyed 35 business

Weather of the Week continued on page 340.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Painted Lady Survey in the Southwest - Survey conducted last 2 weeks of March to evaluate painted lady (*Vanessa cardui*) populations in Baja California, on northwestern Mexican mainland, and in southwestern Arizona and southern California. Populations in Baja California very low; however, millions of larvae found in northwestern Mexico and in southwest desert areas of Arizona and California. Due to favorable rainfall, indications are that most larvae will reach full growth and migrate northward in April. Several million butterflies have already flown northward from overwintering breeding ground. Survey was not extended into eastern Arizona and the highlands of Mexico adjoining this area due to the terrain. During period March 26-27, few scattered butterflies noted at El Paso, Texas; also observed flying across highway from El Paso to Lordsburg, New Mexico. Very large flight observed near Lordsburg. Another large flight observed between Tucson and Gila Bend, Arizona. Data indicate that adults tend to skirt high mountain ranges. For this and unknown reasons massive flights may occur a few days apart and within 30-40 miles of one another. Flights tend to follow lower elevations and across lower mountain passes. *V. cardui* flights in 1968 may well be heaviest in this century. Thus, this species presents potential hazard to crops in the Pacific Northwest and in midwestern and central United States. (Stern).

PAINTED LADY (*Vanessa cardui*) - ARIZONA - Egg laying on wild desert malva plants; migration into cotton fields causing serious damage in Maricopa and Pinal Counties. (Ariz. Coop. Sur.). UTAH - Two adults in flight in Box Elder Canyon and Willard, Box Elder County, April 14. (Knowlton). NEW MEXICO - *Vanessa* sp. adults very abundant in desert and mountain areas throughout southern counties. (N.M. Coop. Rpt.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - IDAHO - Leaves stripped from seed turnips in 5-acre area of 17-acre field in Caldwell, Canyon County; dry conditions responsible for ineffectiveness of controls. Damage severe to many crops throughout area. Second and third instars, probably this species, collected from southwest area sugarbeet fields. (Homan, Apr. 12). UTAH - Retarded alfalfa growth and damaged small grains in Fillmore and Delta areas, Millard County. (Hall et al.). WYOMING - Larvae in several hundred acres of winter wheat, alfalfa, and grassland in Crook County. (Ferrell). COLORADO - Larvae 0-1 per square foot along alfalfa field margins north of Windsor, Weld County. (Johnson). Larvae of this species and *Agrotis orthogonia* ranged 0-2 per row foot east of Erie and 0-5 north of Mead in Weld County; winter wheat damaged. (Jenkins, Johnson). KANSAS - Retarded growth in 6-acre alfalfa field in Ellis County. (Harvey). NEBRASKA - General in wheat and alfalfa in east, southeast, central, south, southwest, and northwest crop districts; many reports of damage. Less than 1 per square foot on wheat and alfalfa in Saunders, Cass, Otoe, and Nemaha Counties. (Keith et al.). SOUTH DAKOTA - Damaged winter wheat in Hamill area, Tripp County; near Gregory, Gregory County; and near Presho, Lyman County. Damage now known to occur in many winter wheat areas of western section. (Jones).

ASTER LEAFHOPPER (*Macrosteles fascifrons*) - MINNESOTA - First of season on winter wheat, rye, alfalfa, and bluegrass in Ramsey, Dakota, Scott, and Carver Counties; 1-5 per 100 sweeps April 15-19. (Minn. Ins. Rpt.). WISCONSIN - Ranged from 1 per 150 sweeps to 10 per 200 sweeps in rye and barley. Found in Spring Green area, Sauk County; near Trempealeau, Trempealeau County; and in lettuce-growing area near Montello, Marquette County. This is first appearance of season. (Wis. Ins. Sur.).

CORN EARWORM (*Heliothis zea*) - ARKANSAS - First adult of season taken in light trap at Hope, Hempstead County, April 7. (Boyer). Eggs up to 1-3 per head in heading crimson clover in Desha County. (Denver).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Damaged grain sorghum and wheat in Cochise County; controls may be required. (Ariz. Coop. Sur.). TEXAS - Increased during past 2 weeks; damage extensive to young corn and grain sorghum in southern and central areas. Damage and stand loss expected to continue as long as weather remains favorable. (Tex. Coop. Rpt.). This species and Schizaphis graminum averaged 10-50 per row foot near Seguin, Guadalupe County. (New).

GREENBUG (Schizaphis graminum) - OKLAHOMA - Light, less than 10 per row foot, in wheat in northeast area; common in most panhandle and southwest area counties. Ranged 50-75 per row foot in wheat in many north-central, central, and northwest counties; very little damage evident. Parasitism by Lysiphlebus testaceipes (a braconid) common and increasing over much of State. (Okla. Coop. Sur.). TEXAS - Activity decreased on small grains in most Rolling Plains counties. Spotted, medium to heavy in some areas; beneficial species very active. Generally very light in panhandle area; up to 2,000 per row foot in Carson County. Some controls applied near city of Panhandle. (Boring et al.). KANSAS - Averaged less than 1 per 10 sweeps on wheat in Douglas, Johnson, and Miami Counties. (Simpson). NEBRASKA - Light, less than 1 per row foot, on Saunders and Nemaha County wheat. (Andersen, Keith). MINNESOTA - First of season in Johnson-Taylor trap April 16 at St. Paul, Ramsey County; less than 1 per 500 sweeps in Carver County bluegrass April 18. (Minn. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - TEXAS - Light to heavy in Foard County. (Boring, Green). OKLAHOMA - Heavy in scattered fields in Greer and Harmon Counties; light in Garvin County and medium in Jackson County. (Okla. Coop. Sur.). ARKANSAS - Survey negative in all fields checked in northwest and west-central areas. (Boyer, Roberts). NEBRASKA - Less than 1 per 10 sweeps on Otoe County alfalfa. (Keith et al.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH DAKOTA - Overwintering larval mortality 50 percent in cornfield near Hunter, Cass County. (Frye, Kaatz). MINNESOTA - Overwintering mortality averaged 15 percent, lower than normal, in east-central and central districts. (Minn. Ins. Rpt.). WISCONSIN - Dissections of corn stubble in scattered areas showed 76 percent larval survival. This is slightly lower than in 1967. Bird predation somewhat higher than last year. These factors may be attributable to open winter. (Wis. Ins. Sur.). MISSOURI - Larvae averaged 111 per acre in 24 fields during overwintering survey in Carroll County April 4. Borers averaged 761 per acre during last 8 years. Half of fields well plowed and little debris exposed. (Lentz). MARYLAND - No pupation in central area. (U. Md., Ent. Dept.). DELAWARE - Pupation 10 percent in Kent and Sussex Counties. (Burbutis).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ALABAMA - Larval survival 10 percent in girdled corn stubble in field in Morgan County; no pupation. Girdled stalks evident in all corn fields examined in county. (Jarrett et al.).

CUTWORMS - TEXAS - Light to medium and widespread near Port Lavaca, Calhoun County; reduced stand of recently planted grain sorghum. (Cook).

DESERT CORN FLEA BEETLE (Chaetocnema ectypa) - ARIZONA - Continues active on milo in Maricopa and Pinal Counties; damaged sweet corn in Maricopa County. (Ariz. Coop. Sur.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - TEXAS - Medium to heavy and damaging grain sorghum in Jackson County; some fields replanted due to general thinning of stands. (Wilson).

CHINCH BUG (Blissus leucopterus) - TEXAS - Heavy and damaging grain sorghum near Giddings, Lee County. (Spivey).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Increased to 100-150 per 100 sweeps in wheat in northwest area; remains noneconomic. (Boyer). OKLAHOMA - Light in wheat in Kay County; 10-15 per linear foot in Payne County. (Okla. Coop. Sur.). KANSAS - Ranged 15-20 per 10 sweeps on Douglas and Johnson County wheat. (Simpson). IOWA - Found in barley and many oat fields April 16 around Ames, Story County. (Wallin). WISCONSIN - Counts in rye and barley averaged 2 per 50 sweeps in Dane, Iowa, and Grant Counties; 1 per 50 sweeps in Spring Green and La Crosse area; and 1 per 200 sweeps in central area. (Wis. Ins. Sur.). MINNESOTA - First collection of season in Johnson-Taylor trap April 16. Averaged 1 per 100 sweeps on Ramsey County winter wheat and 0.2 per 100 sweeps on Carver County bluegrass. (Minn. Ins. Rpt.). WASHINGTON - Light on wheat at College Place, Walla Walla County. (Landis, Johansen).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - TEXAS - Light and spotted in Young, Foard, and Wilbarger Counties. (Boring, Green). OKLAHOMA - Moderate to heavy in lush-growing wheat over western two-thirds of State. (Okla. Coop. Sur.). MINNESOTA - Collected in Johnson-Taylor trap April 15-19. Light, 1-3 per 100 sweeps, on Dakota County winter wheat. (Minn. Ins. Rpt.). WASHINGTON - Light on wheat at College Place, Walla Walla County. (Landis, Johansen).

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - This species and Rhopalosiphum padi medium on barley plantings in Goshen, Tulare County; barley heading out. (Cal. Coop. Rpt.).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEBRASKA - Small larvae ranged 2-6 per foot on Scotts Bluff County wheat. Some damage evident. (Hagen, Apr. 16).

GREAT BASIN WIREWORM (Ctenicera pruinina) - IDAHO - Damaged winter wheat in Clearwater, Lewis, and Nez Perce Counties; damage severe in small isolated areas. This species predominant in area. (Dailey et al., Apr. 12).

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Light to heavy on wheat in Hansford and Sherman Counties; 300-600 per row foot common on dryland wheat. Lighter on irrigated wheat in same area. (Green). OKLAHOMA - Common in wheat in all panhandle counties; area very dry except in irrigated fields. (Okla. Coop. Sur.) KANSAS - Continue heavy in Ellis County. (Harvey).

TURF, PASTURES, RANGELAND

SAY STINK BUG (Pitedia sayi) - CALIFORNIA - Medium on native vegetation in Porterville, Tulare County. (Cal. Coop. Rpt.). NEVADA - Adults medium on Tetradymia in central Washoe County. (Lauderdale).

A GRASS BUG (Labops hesperius) - UTAH - Many nymphs on range grass causing much concern at Orderville, Kane County. (Lindsay, Knowlton).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEW YORK - Adults active in Orange County field April 9. (N.Y. Wkly. Rpt.). NEW JERSEY - Larvae difficult to find April 10 in Gloucester, Salem, and Cumberland County alfalfa; only scattered pinhole feeding injury noted. Very few egg clusters found in new-growth alfalfa; third instar found in Salem County. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Eggs on new-growth alfalfa from Centre County southward; larvae active in Dauphin and Westmoreland Counties April 9-15. (Hower). DELAWARE - Mostly first and second instars trace to common throughout State; damage light to moderate. (Burbutis). MARYLAND - Adults averaged 82 per 100 sweeps in alfalfa near Hagerstown, Washington County;

larval damage very light. Terminal damage 30 percent in fields near Boonsboro, Washington County. Negative in fields surveyed in Harford County. Terminal damage averaged less than one percent near Easton, Talbot County; 50-60 percent damage in one field where controls needed. (U. Md., Ent. Dept.). VIRGINIA - Larvae averaged 400 and adults 4 per 100 sweeps on alfalfa in 45-acre field in Rappahannock County; one or more third instars in all terminals. (Allen). OHIO - Rapid larval increases expected in southern half and in more northern counties of State; first major larval increase (2 per stem) in Ross County field. Alfalfa height 7-8 inches in southern area. (Rose). INDIANA - Treatment warranted throughout southern third of State April 21-27. Larvae ranged 35-87 per square foot; noticeable feeding almost 25 percent. Hatch begun in central third of State; larvae 2-9 per square foot. Feeding injury noted only in some Wabash River Valley fields where development ahead of upland areas. First instars ranged 0-3 per 2 square feet in northern third of State. (Huber). ILLINOIS - Larvae averaged 15 per sweep (30 maximum) in alfalfa south of line from Carmi to Pinckneyville; feeding evident on 40 percent of terminals. Adults averaged 10 per 100 sweeps in same area. Larvae ranged 0-6 per 100 sweeps in most fields north of this line; 300 per 100 sweeps in one field. Terminal damage less than 5 percent in area. Adults averaged 4.75 per sweep and eggs slightly under 100 per square foot north of this line. (Ill. Ins. Rpt.). TENNESSEE - Larvae ranged 10-30 per sweep in untreated alfalfa in Knox, Blount, and Maury Counties; 15 per sweep in Hardeman County; 94 per sweep in untreated field and 27 per sweep on previously treated alfalfa in Henry County. (Quillin). MISSISSIPPI - Late larvae heavy, 35-40 per square foot, on Oktibbeha County alfalfa; foliage becoming very ragged and some plants dying. (Dinkins). ARKANSAS - Larvae less than one per square foot in alfalfa in Crawford County; survey negative in Madison County April 12. (Roberts). Larvae found in Benton County. Det. by E.P. Rouse. Crawford and Benton are new county records. (Boyer). MISSOURI - Larvae heavy, 200-5,000 per 100 sweeps, on southeast area alfalfa past 2 weeks; controls applied in much of area. (Jones). IOWA - Survey negative in alfalfa in Louisa County and in one previously infested field in Clinton County. (Mast). NORTH DAKOTA - Adults 1 per 6 square feet in 2-inch irrigated alfalfa in McKenzie County. (Brandvik). COLORADO - Adults active and feeding in Larimer County. (Simpson). IDAHO - Mating during first week of March at Aberdeen, Bingham County; active during last week of March. One caught in flight trap first week of April. (Carpenter).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - CALIFORNIA - Probably this species, heavy on alfalfa in Woodland, Yolo County; probably well established in northern area. *Hypera* sp. larvae and pupae heavy on burclover in Porterville, Tulare County. (Cal. Coop. Rpt.).

CLOVER LEAF WEEVIL (*Hypera punctata*) - NEBRASKA - Larvae averaged about 1 per square foot in alfalfa and red clover in Otoe County. (Keith et al.). KANSAS - Larvae ranged 10-15 per 10 sweeps on Johnson and Miami County alfalfa; damaged alfalfa in Elk County. (Simpson). INDIANA - Larvae ranged 0-4 per square foot throughout southern two-thirds of State; 50 percent of larvae diseased. (Huber). MARYLAND - Larval damage light to medium in red clover at Gamber, Carroll County. (U. Md., Ent. Dept.). VIRGINIA - Total of 3 larvae found in 1.5-acre clover field in Nelson County. (Allen).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) - NEBRASKA - Adults active in red clover in Otoe County. (Keith et al.). VIRGINIA - Single adult found in 1.5-acre clover field in Nelson County. (Allen). ALABAMA - Larval damage serious to crimson clover at Nanafalia, Marengo County. (Daniel et al.).

CLOVER HEAD WEEVIL (*Hypera meles*) - ALABAMA - Larvae heavy, 1-4 per head, in 150-acre crimson clover field at Megargel, Monroe County. Larval damage serious to crimson clover in Nanafalia, Marengo County; defoliation and stem damage evident with many plants falling over. (Daniel et al.).

CLOVER ROOT CURCULIO (Sitona hispidula) - MISSOURI - Adults ranged 25-650 per 100 sweeps on southwest area red clover and alfalfa; 450 per 100 sweeps in 3 Greene County fields. (Munson). MARYLAND - Adults averaged 3-4 per 10 sweeps on red clover at Gamber, Carroll County. (U. Md., Ent. Dept.).

PEA APHID (Acyrthosiphon pisum) - VIRGINIA - Adults and nymphs averaged 50 per 100 sweeps on alfalfa in Rappahannock County and 98 per 100 sweeps in 1.5-acre clover field in Nelson County. (Allen). ILLINOIS - Light, 0-50 per 100 sweeps, in State. (Ill. Ins. Rpt.). WISCONSIN - Remains unchanged; less than 1 per 10 sweeps. Some nymphs contained embryos. (Wis. Ins. Sur.). MINNESOTA - One aphid found on Carver County alfalfa April 15-19. (Minn. Ins. Rpt.). MISSOURI - Ranged 800-20,000+ per 100 sweeps in alfalfa throughout southern area; lady beetles and damsel bugs increased rapidly during period. (Munson). ARKANSAS - Light in alfalfa in Madison County April 12. Heavy in Crawford County; alfalfa terminals bent over in one field where treatment recommended. (Roberts). Averaged several hundred per 100 sweeps in alfalfa in Benton County; 20 percent winged. (Boyer). TEXAS - Light to heavy in Foard County. (Boring, Green). OKLAHOMA - Ranged 50-100 per sweep in alfalfa in northeast counties; 100-400 per square foot of crown area in scattered fields in central, west-central, north-central, and northwest counties. Controls begun in some areas. (Okla. Coop. Sur.). KANSAS - Light to moderate, 25-300 per 10 sweeps, in 9 southeastern counties. (Redding). Averaged 50 per sweep in 4-inch alfalfa in Ellis County; heavy in 2 Russell County fields; controls expected. (Harvey). Ranged 25-125 per 10 sweeps on alfalfa in 7 east-central counties. Continues heavy in many alfalfa fields in Riley, Pottawatomie, Dickinson, Saline, and McPherson Counties; up to 2,000-3,000 per sweep in Riley and Pottawatomie Counties. Damage severe in these counties and many fields treated. Predators and parasties remain low due to cool weather. (Simpson). NEBRASKA - Averaged 15 per 10 sweeps on alfalfa in Cass and Otoe County. (Keith et al.). ARIZONA - Evident on alfalfa in Pima County; some on alfalfa in Graham County. (Ariz. Coop. Sur.). WASHINGTON - All stages on alfalfa grown for seed and forage; 10-15 per 100 sweeps in Gardena and Touchet area and 50 per 100 sweeps in Umapine, Walla Walla County. (Featherston).

MEADOW SPITTLEBUG (Philaenus spumarius) - DELAWARE - Young nymphs appearing on alfalfa in New Castle County. (Burbutis). MARYLAND - First nymphs of season on alfalfa at Fairland, Prince Georges County; first instars light on 15 acres of red clover at Gamber, Carroll County. (U. Md., Ent. Dept.). VIRGINIA - Spittle masses averaged 1-2 in 95 percent of clover crowns in 50-acre field in Botetourt County; nymphs 3-5 per spittle mass. (Allen). PENNSYLVANIA - More abundant than usual on alfalfa in southern half of State. (Lloyd, Apr. 15). INDIANA - Hatch well underway throughout southern two-thirds of State; nymphs 4-24 per square foot in alfalfa. Spittle masses in southern third but not in central third of state. (Huber).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Ranged 30-60 per 100 sweeps on alfalfa near Safford, Graham County. (Ariz. Coop. Sur.). NEW MEXICO - Adults averaged 3-5 per 25 sweeps in alfalfa near Carlsbad, Eddy County. (Mathews). MISSISSIPPI - Light, one per 3 row feet, on alfalfa in Oktibbeha County. (Dinkins).

TARNISHED PLANT BUG (Lygus lineolaris) - INDIANA - First instars on Dearborn County alfalfa April 16. (Huber). ILLINOIS - Adults ranged 0-100 per 100 sweeps (average 20) in State. (Ill. Ins. Rpt.). IOWA - Averaged 5 per 10 sweeps in alfalfa in Louisa County. (Mast). ARKANSAS - Only adults in alfalfa surveyed, highest counts 20 per 100 sweeps. (Boyer, Roberts). OKLAHOMA - Ranged 2-8 per 10 sweeps in alfalfa in Nowata, Craig, and Ottawa Counties; 2 per 10 sweeps in Payne County. (Okla. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - MARYLAND - First instars ranged 30-40 per sweep in red clover in Carroll County. (U. Md., Ent. Dept.). MINNESOTA - Active, 1-10 per 100 sweeps, in alfalfa in State. (Minn. Ins. Rpt.). NEW MEXICO - Adults averaged 4-6 per 25 sweeps in Eddy County alfalfa. (Mathews). ARIZONA - Adults continue prominent, 20-80 per 100 sweeps, on alfalfa in Yuma, Pinal, and Pima Counties. Increasing in Graham County; severe on old hay stands in Safford area. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - VIRGINIA - Adults averaged 6 per acre in 50-acre clover field in Botetourt County; several mating but no egg laying. (Allen). IOWA - Adults observed in south-eastcentral area. (Mast).

NOCTUID MOTHS - MICHIGAN - Caenurgina erechtea first collected in light traps April 12 and 13; noneconomic in past years. (Janes). ILLINOIS - Lacinipolia renigera common in grass debris in red clover fields; 4 per square foot in one field and less than one per square foot in most other fields. (Ill. Ins. Rpt.). ARIZONA - Spodoptera exigua averaged 25 per 100 sweeps on alfalfa in Cochise County field and 1-2 per 100 sweeps on alfalfa in Graham County. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Very heavy in alfalfa and weeds in Graham County. (Ariz. Coop. Sur.).

SPRINGTAILS - MARYLAND - Unusually heavy, several hundred per sweep, in red clover at Gamber, Carroll County. (U. Md., Ent. Dept.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Negative in 2-leaf stage cotton field in Shelby, Shelby County. (Kidd). No adult emergence in any county to date. Over 50 percent of cotton planted in State. (Rutledge et al.). TEXAS - Seven adults in lure traps near Santa Rosa, Cameron County. (Deer).

DARKLING BEETLES - TEXAS - Heavy with serious damage to scattered fields in lower Rio Grande Valley. (Deer). ARIZONA - Blapstinus spp. larval damage serious to cotton in Pinal County. (Ariz. Coop. Sur.).

CUTWORMS - ARIZONA - Peridroma saucia damaged some fields in Pinal County; controls necessary. (Ariz. Coop. Sur.). TEXAS - Feltia subterranea and Agrotis ipsilon caused much damage in scattered fields near Bay City and in lower Rio Grande Valley. (Deer, Vestal).

APHIDS - ARIZONA - Heavy on underside of newly formed leaves in many cotton fields in Pinal and Pima Counties; evident on some cotton in Graham County. (Ariz. Coop. Sur.).

FALSE CHINCH BUG (Nysius ericae) - TEXAS - Destroyed some cotton in northeastern Cameron and southeastern Willacy Counties. (Deer).

A ROOT MAGGOT (Hylemya sp.) - CALIFORNIA - Larvae heavy in sprouting seeded cotton in Huron area, Fresno County. (Cal. Coop. Rpt.).

TOBACCO

GREEN PEACH APHID (Myzus persicae) - FLORIDA - All stages severe on 50 percent of 100,000 plants at Lakeland, Polk County. Entire 1-acre field refused certification. (McLeod).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - VIRGINIA - Feeding generally light to medium around margins of tobacco plant beds in Pittsylvania County. (Dominick).

SUGARBEETS

GREAT BASIN WIREWORM (Ctenicera pruinina) - WASHINGTON - Larval damage light to sugarbeets on 70 acres at Brownstown, Yakima County. (Onsager).

SEED-CORN BEETLE (*Agonoderus lecontei*) - COLORADO - Adults still numerous in northeast area soil. Few adults flying. (Johnson).

SUGAR-BEET ROOT MAGGOT (*Tetanops myopaeformis*) - COLORADO - Pupae 0-3 per square foot in upper 2 inches of soil in old fields in Weld County. (Alldredge, Johnson).

MISCELLANEOUS FIELD CROPS

RED-BACKED CUTWORM (*Euxoa ochrogaster*) - WASHINGTON - Larvae ranged 10-20 per crown in parts of hop yards at Prosser, Benton County; feeding on new shoots. (Cone).

POTATOES, TOMATOES, PEPPERS

BEET ARMYWORM (*Spodoptera exigua*) - ARIZONA - Damaged potato vines in Queen Creek area, Maricopa County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Heavy in some potato fields in Queen Creek area, Maricopa County. (Ariz. Coop. Sur.).

FLEA BEETLES - ALABAMA - *Chaetocnema pulicaria*, *Epitrix cucumeris*, and other species caused light damage on 1,500-2,000 acres of commercial tomatoes in 2-leaf stage on Chandler Mountain, St. Clair County; controls will be complete on all acreage by April 26. Much of this acreage in corn in 1967. Adults ranged 2-10 per clump of seedling corn in heavy volunteer stand. (Smith et al.).

GREAT BASIN WIREWORM (*Ctenicera pruinina*) - WASHINGTON - Larval damage light to potato seed pieces on 600 acres at Burbank, Walla Walla County. (Onsager).

BEANS AND PEAS

BEAN APHID (*Aphis fabae*) - ALABAMA - Winged females migrated to several hundred acres of commercial 2 and 3-leaf stage beans in St. Clair County; first-generation nymphs 2-15 per plant on scattered plants. (Smith et al.).

AN ANTHOMYIID FLY (*Pegomya* sp.) - CALIFORNIA - Larvae moderate in planted bean seeds generally in Oroville area, Butte County. (Cal. Coop. Rpt.).

COLE CROPS

IMPORTED CABBAGEWORM (*Pieris rapae*) - ALABAMA - Larvae heavy on commercial cabbage in Blount County; flight and egg laying heavy statewide past several weeks. (McCall et al.). VIRGINIA - Adults occasionally in orchards and weeds in Frederick and Clarke Counties; no larvae found. (Allen). PENNSYLVANIA - First adult activity of season in Centre County. (Adams, Apr. 12). OHIO - First adult of season in Franklin County April 11. (Davidson). MICHIGAN - found in Oakland (April 11), Ingham (April 12), and Livingston (April 13) Counties. Weeds only hosts available for egg laying. (Janes).

CABBAGE LOOPER (*Trichoplusia ni*) - ALABAMA - Adults in flight around lights in central and southern areas; egg laying should become widespread. (McQueen). FLORIDA - Eggs and larvae increasing; infested 25-50 percent of cabbage plants inspected at Sanford, Seminole County. (Greene).

GENERAL VEGETABLES

ASPARAGUS BEETLE (*Crioceris asparagi*) - DELAWARE- Adults and eggs abundant on young asparagus spears in one area of Kent County; damage heavy. (Burbutis).

ALFALFA LOOPER (Autographa californica) - CALIFORNIA - Larvae medium on lettuce plantings at Bakersfield, Kern County. (Black).

CUTWORMS - OHIO - Agrotis ipsilon and Peridroma saucia adult flight begun in central area; first occurrence of season in blacklight trap April 11-18. (Rose).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Three of 10 specimens pupated at Vincennes. (Dolphin, Apr. 15). WASHINGTON - First pupa of season at Yakima, Yakima County. (Butt). CALIFORNIA - Medium in pears at Walnut Grove, Sacramento County. (Cal. Coop. Rpt.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - VIRGINIA - Adults emerged April 12 in cages at Charlottesville; no egg laying. Field populations not observed. (Bobb, Allen).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - CONNECTICUT - Larval activity increased; damage noticeable on unsprayed apple trees. (Savos, Apr. 16).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - VIRGINIA - Adults flying in orchards in Shenandoah, Frederick, and Clarke Counties; some egg masses found but no hatch. (Hill, Allen). MARYLAND - Hatch April 12 on apple at Hancock, Washington County. (U. Md., Ent. Dept.). NEW YORK - Flying in orchards at Lagrangeville and Mellenville April 12. No moths in bait traps, but pheromone traps attracted males. (N.Y. Wkly. Rpt.). INDIANA - Overwintering moths increasing at Vincennes; 1,435 males taken in 30 sex lure traps; highest count this season. (Dolphin, Apr. 15).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OKLAHOMA - On native plum in Nowata, Craig, and Ottawa Counties; late larvae on same host in Major and Alfalfa Counties. (Okla. Coop. Sur.). CONNECTICUT - Egg masses began hatching April 11. Injured foliage and small tents easily spotted on unsprayed apple trees. (Savos, Apr. 16).

AEGERIID MOTHS - ALABAMA - Sanninoidea exitiosa damage excessive on peach trees in 2 home orchards in St. Clair County; unusual amount of gum below ground line where larvae extremely active and girdling. (Payne et al.). INDIANA - Some pupation of overwintering larvae of Synanthedon pictipes at Vincennes. (Dolphin, Apr. 15).

GEOMETRIID MOTHS - MICHIGAN - Alsophila pometaria and Paleacrita vernata male collections in blacklight traps almost ended for season. (Newman, Apr. 15).

CLIMBING CUTWORMS - MICHIGAN - Fed on buds in southwest orchards. (Wooley, Apr. 15).

PACIFIC FLATHEADED BORER (Chrysobothris mali) - CALIFORNIA - Damage severe to prune trees at Biggs, Butte County; 60 percent loss of year-old trees in 125-acre orchard. (Cal. Coop. Rpt.).

CALIFORNIA PRIONUS (Prionus californicus) - UTAH - Larval damage severe to roots of apple trees in orchard at Willard, Box Elder County. (Knowlton, Allred).

WEEVILS - OKLAHOMA - Anthonomus scutellaris averaged 3 per tree on native plum in Noble County; first report of season. (Okla. Coop. Sur.). DELAWARE - Conotrachelus nenuphar adults collected from unsprayed peach trees in Kent County. (MacCreary).

PEAR SAWFLY (*Hoplocampa brevis*) - MARYLAND - Collected in pear fruit March 26, 1968, at Hebbville, Baltimore County, by E.J. Ford, Jr. Det. by D.R. Smith. This is a new State record. (U. Md., Ent. Dept.). Larvae collected from same location May 14-17, 1967, but determination not positive. (PPC).

ROSY APPLE APHID (*Dysaphis plantaginea*) - CONNECTICUT - Active with some molting on developing apple buds. (Savos, Apr. 16). MARYLAND - Very light; some curling begun on apple leaves. (U. Md., Ent. Dept.). MISSOURI - Light on southeast area apples. (Wkly. Rpt. Fr. Grs., Apr. 16).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - INDIANA - Females from overwintering eggs depositing nymphs; populations increasing rapidly at Vincennes. (Dolphin, Apr. 15). WISCONSIN - Fundatrices commenced producing nymphs on *Prunus* spp. in western Dane County. Trees in pink stage. (Wis. Ins. Sur.).

APHIDS - CONNECTICUT - *Aphis pomi* active with some molting on developing apple buds. (Savos, Apr. 16). ALABAMA - *Eriosoma lanigerum* clumps very heavy above ground line on apple trees in 2 home orchards in St. Clair County; several small clumps in top sections of 3 to 4-year-old trees. (Payne et al.). UTAH - *Myzus persicae* appeared on peach in Holladay area, Salt Lake County. (Knowlton).

A LEAFHOPPER (*Erythroneura obliqua* group) - INDIANA - Overwintered adults feeding on new foliage, caused some stippling at Vincennes. (Dolphin, Apr. 15).

WHITE PEACH SCALE (*Pseudaulacaspis pentagona*) - FLORIDA - Some nymphs but mostly unfertilized adult females on peach trees at Gainesville, Alachua County. Det. by L.C. Kuitert. (Kuitert).

PEAR PSYLLA (*Psylla pyricola*) - CONNECTICUT - Some eggs on pears at Storrs. Bulk of early season egg laying yet to come. (Savos, Apr. 16).

TARNISHED PLANT BUG (*Lygus lineolaris*) - INDIANA - Adults attracted to apple and peach flowers at Vincennes. Dimpling and catfacing of fruit may result. (Dolphin, Apr. 15).

STINK BUGS (*Euschistus* spp.) - ARIZONA - Damaged young fruit trees in Graham County. (Ariz. Coop. Sur.).

EUROPEAN RED MITE (*Panonychus ulmi*) - MISSOURI - Moderate on apples in southeast, light in central and northeast areas. (Wkly. Rpt. Fr. Grs., Apr. 16). INDIANA - First new larvae on apples at Vincennes April 11. Many larvae feeding on new leaves April 15. (Dolphin). OHIO - First larvae of season in Wayne County April 13-14; one percent of eggs hatched. Apples in early pink stage in northeast area. (Forsythe). Hatch begun and larvae light in Jackson County; apples in late pink to early bloom stage in south-central area. (Rose). VIRGINIA - Hatch in nearly all orchards. Up to 7 per leaf in Botetourt County. Up to 46 per leaf in one orchard and overwintering eggs very heavy in 50-acre orchard in Nelson County. (Allen). MARYLAND - Eggs hatched; nymphs ranged 30-40 per leaf on unsprayed trees. (U. Md., Ent. Dept.). NEW JERSEY - First hatch of season April 16 in Red Delicious apple block in Gloucester County. (Ins.-Dis. Newsltr.). CONNECTICUT - Overwintering eggs began hatching on apples April 11. Hatching shoud be completed soon with predicted above average temperatures. (Savos, Apr. 16).

PECAN NUT CASEBEARER (*Acrobasis caryae*) - TEXAS - During past 2 weeks, larvae tunneled in pecan shoots in Wilbarger, Shackelford, and Stephens Counties. (Boring).

A CERAMBYCID BEETLE (*Neoclytus caprea*) - TEXAS - Collected from pecan trees in El Paso County. Moderate to light infestations widespread over city of El Paso. (Neeb).

CITRUS

Quarterly Citrus Insect and Mite Outlook in Florida - April through June - This outlook is based on the assumption that weather beyond the period of the current U.S. Weather Bureau 30-day outlook will be normal. Therefore, the forecasts given below cannot be viewed with the same degree of confidence as those in the "Insect and Disease Summary" usually released twice each month by this station.

CITRUS RUST MITE (*Phyllocoptruta oleivora*) population expected to continue above normal and in high range in April, decrease to normal in May, and increase in late June. Gradual increase of TEXAS CITRUS MITE (*Eutetranychus banksi*) will start in late April, continue through May, and enter high range about mid-June. CITRUS RED MITE (*Panonychus citri*) increase will occur. Statewide population expected to be below average. About 20 percent of young groves will develop important infestations. Very few SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) infestations will be important despite moderate increase in 6 percent of groves until mid-June. BLACK SCALE (*Saissetia oleae*) population expected to be near normal abundance. It will build up in late May and enter high range by mid-June. Although gradual increase of GLOVER SCALE (*Lepidosaphes gloverii*), PURPLE SCALE (*L. beckii*), YELLOW SCALE (*Aonidiella citrina*), and CHAFF SCALE (*Parlatoria pergandii*) will occur, none expected to exceed normal levels. AN ARMORED SCALE (*Unaspis citri*) will appear in additional groves and spread in those already infested. APHIDS will be much below normal and of little importance except in recently hedged groves or in young groves of susceptible varieties. MEALYBUGS will increase in May and June but expected to be important in less than 5 percent of groves. WHITEFLIES expected to be below normal abundance and at moderate level. (W.A. Simanton).

AN ARMORED SCALE (*Unaspis citri*) - FLORIDA - All stages general and severe on stems and bark of sweet orange trees in nursery at Plymouth, Orange County. (Musgrove, Apr. 9). Adults collected April 11 on stems and bark of sweet orange at Lake Hort, Orange County; about 600 of infested trees quarantined until infestation eliminated. (Crews).

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Second generation appearing in citrus; controls required. (Ariz. Coop. Sur.).

CITRUS RED MITE (*Panonychus citri*) - ARIZONA - Severe in some orchards in Yuma County; controls in progress. (Ariz. Coop. Sur.).

SMALL FRUITS

WESTERN GRAPE LEAF SKELETONIZER (*Harrisina brillians*) - NEVADA - First adults of season at Las Vegas, Clark County, April 14. Occurrence one month ahead of normal as in 1967. (Zoller).

STRAWBERRY LEAF ROLLER (*Ancylis comptana fragariae*) - MARYLAND - First larvae of season found at Fairland, Prince Georges County. (U. Md., Ent. Dept.).

RED-BACKED CUTWORM (*Euxoa ochrogaster*) - WASHINGTON - Occasional grape bud damaged in Prosser, Benton County. (Cone).

PACIFIC COAST WIREWORM (*Limonius canus*) - WASHINGTON - Adults landing on trellised Concord grapes and destroying swollen buds. Large area involved; bud loss 1 percent or less at Prosser, Benton County. (Cone).

MEADOW SPITTLEBUG (*Philaenus spumarius*) - MARYLAND - First instars light on strawberries at Fairland, Prince Georges County; first of season. (U. Md., Ent. Dept.).

PLANT BUGS - MISSOURI - Moderate on strawberries in southeast and light in east-central areas. (Wkly. Rpt. Fr. Grs., Apr. 16).

ORNAMENTALS

A PLANARIAN FLATWORM (*Geoplana mexicanum*) - CALIFORNIA - Heavy on camellia blossoms in nursery at Sacramento, Sacramento County. Periodically severe on flowers and bush fruits. (Cal. Coop. Rpt., Mar. 29).

IRIS BORER (*Macronoctua onusta*) - DELAWARE - Eggs hatched; young larvae on iris in New Castle County. (MacCreary).

A CONIFER APHID (*Cinara tujafilina*) - OKLAHOMA - Medium to heavy on Cleveland County evergreens. (Okla. Coop. Sur.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - TEXAS - Aerial photographic survey in January over 3.6 million acres of southeast area showed overwintering population levels similar to past 3 years. Infested 3.6 pines per thousand acres. Detection flights begun in February resulted in 67 infestations (totaling 1,243 trees) for first quarter of 1968. Another 900 infested trees controlled on National Forests in Angelina, Big Thicket, Tenaha, and Yellowpine Districts. Tenaha infestation in Shelby County believed most northern outbreak in State. (Ollieu).

ENGRAVER BEETLES (*Ips spp.*) - TEXAS - *I. avulsus*, *I. grandicollis*, and *I. calligraphus*, contrary to past years, killed many trees in eastern area during first quarter of 1968; high populations in late 1967 account for this condition. Salvaged 748 infested trees on U.S. Forest Service lands in Trinity and Angelina Districts. (Ollieu).

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) - TEXAS - Chemical treatment applied to 246 trees on National Forests in Angelina and San Augustine Counties. Salvaged 5 trees in Trinity County. (Ollieu).

DEODAR WEEVIL (*Pissodes nemorensis*) - TEXAS - Severely attacked-pine seedlings and saplings, which survived late 1967, displayed needle kill and curl from tips inward. Larvae reached full size by late March with some pupae present. Woodpeckers destroyed many weevils in certain heavily infested trees. (Ollieu).

NANTUCKET PINE TIP MOTH (*Rhyacionia frustrana*) - OKLAHOMA - Active on Garvin County pines. (Okla. Coop. Sur.).

CHERMIDS - VIRGINIA - *Pineus strobi* adults and nymphs on Scott County white pine. (Reynolds, Amos, Apr. 9). PENNSYLVANIA - *Adelges cooleyi* beginning to deposit eggs on some Chester County firs April 5. (Kearby).

PINE SPITTLEBUG (*Aphrophora parallela*) - DELAWARE - First young nymphs of season on loblolly pines in southern Sussex County. (Burbutis).

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - VIRGINIA - Tents conspicuous on wild cherry in Pittsylvania County. (Dominick). Tents 15 inches in diameter in Nelson and Botetourt Counties. Up to 14 tents per tree in Amherst County. (Allen). MISSOURI - Larvae easily collected from wild cherry and plum in southwest area. Size ranged from third to half grown. (Francka). ALABAMA - Larvae, 50+ per tent, heavy and widespread on wild cherry throughout Morgan County and northern area; lighter on apple, occasionally on peach. (Rutledge et al.). INDIANA - Hatch completed in southern half of State but beginning in northern area on wild cherry. Larvae ranged one-fourth to one-half inch long; webs 2-6 inches in diameter. (Huber, Porter).

FOREST TENT CATERPILLAR (*Malacosoma disstria*) - IDAHO - Overwintering eggs hatching April 10 on birch at Idaho Falls, Bonneville County. (Moss).

SPRING CANKERWORM (*Paleacrita vernata*) - NORTH DAKOTA - Females heavy on trees near Harwood, Cass County. (McBride).

A NOCTUID MOTH (*Oncocnemis punctilinea*) - NEVADA - Larvae light to medium on ash at North Las Vegas, Clark County. (Beckmyer).

BOXELDER TWIG BORER (*Proteoteras willingana*) - NORTH DAKOTA - Larvae 5 per 8 stems on boxelder trees in shelterbelt near Hunter, Cass County. (Frye, Kaatz).

SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) - OKLAHOMA - First-generation adults in Payne County. (Okla. Coop. Sur.).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - TEXAS - Infested elms in Wilbarger, Foard, and Hardeman Counties during past 2 weeks. (Boring, Green).

LOCUST LEAF MINER (*Xenochalepus dorsalis*) - TENNESSEE - Overwintered adults appearing on early locust foliage in Knox County. (Quillin).

APHIDS - OKLAHOMA - *Longistigma caryae* heavy on oak and sycamore in Tulsa and Pushmataha Counties. (Okla. Coop. Sur.). NEVADA - *Pterocomma bicolor* medium on *Populus sp.* at North Las Vegas, Clark County. (Johnson).

EUROPEAN ELM SCALE (*Gossyparia spuria*) - NEW MEXICO - Very heavy on most American elms at Santa Fe, Santa Fe County. (Heninger).

HEMISPHERICAL SCALE (*Saissetia coffeae*) - ALABAMA - Heavy on several oaks and other ornamentals at Fayette, Fayette County. (Pitts).

A PSYLLID (*Trioza maura*) - CALIFORNIA - Nymphs and adults moderate on willow at Glendora, Los Angeles County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

MOSQUITOES - MICHIGAN -Collected at Livingston County light trap; annoying in buildings. (Janes, Apr. 13). WISCONSIN - Some hatch noted in Manitowoc County; larvae pupating in laboratory. (Wis. Ins. Sur.). MINNESOTA - First hatch of single-brooded *Aedes* March 25. *Anopheles quadrimaculatus*, *A. walkeri*, and *Culiseta inornata* annoying past 10 days. To date, larvae of *Mansonia perturbans*, *C. inornata*, other *Culiseta spp.*, and 13 species of *Aedes* collected in Minneapolis and St. Paul. Mostly second and third instars; some fourth. Lack of winter snow and spring rains kept many breeding sites dry or larvae stranded as water receded. (Minn. Ins. Rpt.). MISSOURI - *Aedes canadensis* larvae in marsh area and *Culiseta inornata* adult from light trap in Boone County first of season. (Kessler). ALABAMA - Larvae very heavy in most containers in central area past 10 days; adults continue increase. (McQueen). OKLAHOMA - Adults of *Aedes triseriatus*, *Anopheles barberi*, *Culex restuans*, and *Culiseta inornata* active in Payne County. (Okla. Coop. Sur.). COLORADO - Overwintering adults of *Aedes vexans* and *A. dorsalis* in light traps. No larvae found. (Ronald). UTAH - Adults active at Woods Cross, Davis County. Larvae common in some Rich County waters. (Roberts, Knowlton). CALIFORNIA - Mosquitoes generally above average; long periods of warm weather contributed to increase. (Cal. Coop. Rpt.).

SCREW-WORM (*Cochliomyia hominivorax*) - Total of 10 cases reported in U.S. April 14-20 as follows: TEXAS - Bee 1, Hidalgo 2, McMullen 1, Starr 2, Webb 2; ARIZONA - Yuma 1; CALIFORNIA - Imperial 1. Total of 69 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 24, Sonora 22, Chihuahua 1, Coahuila 4, Nuevo Leon 4, Tamaulipas 14. One case reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 27,368,000; Arizona 888,000; California 800,000; Mexico 98,242,000. (Anim. Health Div.).

HORN FLY (Haematobia irritans) - ALABAMA - First-generation adults ranged 1-5 per head on cattle in northern area, especially in Morgan, Lawrence, and Colbert Counties. Light on several Bibb County herds. (Odom et al.). MISSISSIPPI - Adults increased to 250 per head on beef cattle in Oktibbeha and Lowndes Counties. (Dinkins). ARKANSAS - Light on northwest area cattle. (Boyer). OKLAHOMA - Light, 25-50 per head, on northeast area cattle; 50-75 per head in north-central and northwest areas. Light on cattle in Cleveland and Garvin Counties; medium in Cotton County. (Okla. Coop. Sur.).

FACE FLY (Musca autumnalis) - MARYLAND - Adults averaged 10-20 per head on beef cattle in central counties. (U. Md., Ent. Dept.). IDAHO - Up to 100 clustering on sunny side of building at Payette, Payette County; only 2 seen inside. (Matsen).

CATTLE GRUBS - WISCONSIN - Survey shows statewide average of 44 percent infestation of dairy heifers during first 2 weeks of April; percentage reflects 38 percent of randomly sampled herds. (Wis. Ins. Sur.). OKLAHOMA - Hypoderma lineatum adults active in Noble County. (Okla. Coop. Sur.). ALABAMA - H. lineatum egg laying begun on Morgan County cattle; some annoyance noted. (Rutledge).

HARD-BACKED TICKS - OKLAHOMA - Amblyomma americanum light in drag counts in Muskogee and Cherokee Counties. (Okla. Coop. Sur.). MINNESOTA - Dermacentor variabilis becoming active in suburbs of Minneapolis and St. Paul. (Minn. Ins. Rpt., Apr. 12).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ALABAMA - Additional specimens collected in Franklin County. (Ponder). OKLAHOMA - Bite case reported at Ponca City, Kay County. (Okla. Coop. Sur.). INDIANA - Collected in home at Bruceville, Knox County, March 18. Det. by W.J. Gertsch. This is a new county record. (Dolphin)

SPRINGTAILS - CALIFORNIA - Hypogastrura armata and Onychiurus fimetarius medium in earthworm beds in Tulare County; occasionally pests in earthworm farms. (Cal. Coop. Rpt.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - ALABAMA - Large swarms of R. flavipes emerging from commercial buildings and decaying tree stumps on lawns in Lee County area. (Johnson et al.). TEXAS - Several R. flavipes infestations in Bowie, Rusk, and Williamson Counties. (Lynch, Gibson). IDAHO - Additional activity, probably R. hesperus, in homes at Boise, Ada County; Lewiston, Nez Perce County; Aberdeen, Bingham County. (Vail et al.). WASHINGTON - Adults, probably R. hesperus, in flight at Ephrata, Grant County. (Foeppel).

MISCELLANEOUS WILD PLANTS

A TEPHRITID FLY (Aciurina maculata) - CALIFORNIA - Larvae heavy in twig galls on Chrysothamnus sp. generally in Alturas area, Modoc County. (Cal. Coop. Rpt.).

A PSYLLID (Psylla minuta) - CALIFORNIA - Nymphs and adults moderate on Purshia tridentata at Johnstonville, Lassen County. (Cal. Coop. Rpt.).

STORED PRODUCTS

POTATO TUBERWORM (Phthorimaea operculella) - MICHIGAN - Inspected 9 warehouses in Detroit and vicinity December 5, 1967, through February 7, 1968; no evidence of adults or larvae in any warehouse. Drosophila melanogaster (a vinegar fly) found in moderate numbers. (Newman).

A DERMESTID BEETLE (Trogoderma ornatum) - CALIFORNIA - Larvae moderate in dog food factory at San Leandro, Alameda County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - PENNSYLVANIA - Adalia bipunctata very noticeable April 9-15 in homes and on shrubbery statewide. (Gesell). MARYLAND - Lady beetles increased in apple orchards; may be responsible for low numbers of rosy apple aphid. (U. Md., Ent. Dept.). ARKANSAS - Hippodamia convergens and Coleomegilla maculata light, 50-75 per 100 sweeps, in wheat and alfalfa in northwest area; reproduction light. Some eggs and larvae evident. (Boyer, Roberts).

GREEN LACEWINGS (Chrysopa spp.) - ARKANSAS - Only adults on all alfalfa and wheat surveyed in west-central and northwest areas. One larva on Crawford County alfalfa. (Boyer, Roberts).

A BIG-EYED BUG (Geocoris punctipes) - ARKANSAS - Continues light in State with no reproduction. (Boyer).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Adults 40-50 per 100 sweeps. (Boyer).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - Two adults on wheat near Topeka, Lagrange County, April 12. (Porter). MICHIGAN - Active on warm days in Berrien County. As of April 12, activity and adult numbers low. Little feeding noted. Observations limited. (Connin, Ruppel).

GRASSHOPPERS - COLORADO - Averaged 5 per square yard on rangeland near Atwood, Logan County. (Foster). NORTH DAKOTA - Most eggs in clear and coagulated stages in cropland areas of Dunn, Golden Valley, Morton, Burleigh, and Emmons Counties. Eggs 44 percent clear, 36 percent coagulated, 12 percent eyespot, and 8 percent segmented. Eggs most advanced (35 percent segmented) in sandy areas of southern Burleigh County. Eggs mostly clear in Morton and Emmons Counties; Melanoplus differentialis dominant. Predators in all counties. Ground beetle larvae most numerous; up to 8 per square foot (average 1.8) destroyed 7 percent of egg pods. Bee flies and blister beetles trace. No dessicated eggs found. Late hatch expected again in 1968 due to species involved and retarded development. (Brandvik). MINNESOTA - M. femurrubrum and M. bivittatus eggs in central district showed little or no development. Some M. bivittatus eggs on protected southern slopes showed early coagulation. Ground beetle larvae destroyed less than 10 percent of egg pods. (Minn. Ins. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Found for first time in Bacon, Jasper, Johnson, Long, and Montgomery Counties; extensions in Cook, Lowndes, and Wayne Counties. MISSISSIPPI - Extensions in Lee and Yazoo Counties. TEXAS - Total of 43,000 acres treated in Gregg and Harrison Counties. (PPC South. Reg., Mar. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - First emergence from screen cages in Graham County April 5. (Ariz. Coop. Sur.). TEXAS - Live larvae taken during debris inspections in Tyler, Victoria, Jackson, Goliad, and Medina Counties; high mortality indicated from surface debris in Young and Jack Counties. (PPC South. Reg., Mar. Rpt.).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Egg mass survey conducted April 12. Found 159 egg masses at 58 stops in Colfax County and 7 egg masses at 26 stops in Harding County. (Finnie).

SOYBEAN CYST NEMATODE (Heterodera glycines) - LOUISIANA - Infested 2 soybean fields in Tensas Parish for a new parish record. MISSISSIPPI - Found in 300-acre soybean field in Jefferson County for a new county record. (PPC South. Reg., Mar. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - KENTUCKY - Collected 18 first through fourth instars in previously treated 3-acre area near Hopkinsville, Christian County. Sweetclover preferred host. No pupae in area. (PPC Cent. Reg., Mar. Rpt.). ALABAMA - Treated 454 acres in 4 counties. GEORGIA - Controls applied to 460 acres in Bibb, Crisp, Laurens, Thomas, and Washington Counties. (PPC South. Reg., Mar. Rpt.).

HAWAII INSECT REPORT

Adult STINK BUG (Plautia stali) taken at light in Kaneohe, Oahu. To date, adults taken from several areas in Honolulu, Pearl City, and Kaneohe. (Funasaki).

Turf, Pasture - Larvae and damage of a GRASS WEBWORM (Herpetogramma licarsisalis) remain heavy in 200 acres of Kikuyu grass pasture at Huleia, Kauai; 8 of 18 egg clusters (44 percent) found within 0.25-acre area in pasture parasitized by a MINUTE EGG PARASITE (Trichogramma semifumatum). Larvae and damage trace on lawns at Wailua; 19 of 20 egg clusters (95 percent) found on this area parasitized by T. semifumatum. (Funasaki, Sugawa).

Vegetables - CARMINE SPIDER MITE (Tetranychus telarius) heavy on snap beans and eggplants in some fields at Waianae, Oahu; very light on same crops in Waimanalo. (Yamamoto, Sato).

Ornamentals - Nymphs and adults of a LEAFHOPPER (Protalebrella brasiliensis) heavy, 30 per sweep, on wedelia in Kaneohe, Koko Head, and several areas in Honolulu, Oahu; feeding injury evident on foliage. (Funasaki).

Forest and Shade Trees - Larval outbreak of a NOCTUID MOTH (Hypocala deflorata) caused much damage to flush growth of lama (Diospyros ferrea), a native species, at Halepiula, North Kona, Hawaii Island, April 1. (Davis). KIAWE FLOWER LOOPER (Cosymbia serrulata) adult light trap collections indicate populations increasing in Kailua and Kaneohe, Oahu; collections from several areas on Oahu during past year showed increases during spring and peak levels in June. (Higa).

Beneficial Insects - Adults of a HISTERID BEETLE (Hister nomas) light in cow dung in pasture at Molokai Ranch. This predator of horn fly larvae apparently reached Molokai on its own as no releases made on that island. (Krauss). SOUTH AFRICAN EMEX WEEVIL (Apion antiquum) larvae, pupae, and adults heavy on emex plants along main highway in Waimea, Hawaii Island; complete destruction of emex in area expected. (Yoshioka).

Miscellaneous - GIANT AFRICAN SNAIL (Achatina fulica) surveillance continues at Kahaluu and Kona on Hawaii Island and at Poipu and Wahiawa on Kauai. No live snails detected past several months. Metaldehyde bait applications made periodically to facilitate followup surveys. (Yoshioka, Sugawa). No additional specimens of a LONGHORNED GRASSHOPPER (Euconocephalus nasutus) found during surveys in Waipahu, Oahu; only one live male found in State at Waipahu January 15. (Otsuka).

INSECT DETECTION

New State Records

An OEDEMERID BEETLE (Oxycopis suturalis) - DELAWARE - Adult collected in blacklight trap in Dover, Kent County, July 13, 1966, by J. Franklin. Det. by R.H. Arnett. (Burbutis).

PEAR SAWFLY (Hoplocampa brevis) - MARYLAND - Collected in pear fruit at Hebbville, Baltimore County, March 26, 1968, by E.J. Ford, Jr. Det. by D.R. Smith. (p. 333).

New County and Parish Records

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Crawford and Benton Counties. (p. 328).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - INDIANA - Knox County. (p. 336).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Bacon, Jasper, Long, Johnson, and Montgomery Counties. (p. 338).

SOYBEAN CYST NEMATODE (Heterodera glycines) - LOUISIANA - Tensas Parish. MISSISSIPPI - Jefferson County. (p. 339).

CORRECTIONS

CEIR 18(14): 262 - Light trap collections - FLORIDA - Sanford - Salt-marsh caterpillar 67 should read granulate cutworm 67. (Fla. Coop. Sur.).

Weather of the Week continued from page 324.

establishments, and destroyed or damaged 400 residences along a 5-mile path. Numerous other twisters struck elsewhere in Arkansas and in Oklahoma, Kansas, and Missouri and thunderstorms were active in more than a dozen States. Saturday brought more tornadoes. These struck Minnesota, Wisconsin, Indiana, and Texas. Thunderstorm activity dumped torrential rains on Rio Grande City, Texas, causing local flooding. Precipitation totals exceeded 3 inches in scattered spots from Texas to southern Wisconsin with wide areas across the Great Plains receiving from 1 to 2 inches. Areas with little or no rain during the week include California, the southern portions of Arizona and New Mexico, eastern Mississippi, Alabama, Florida, and the western portion of New England.

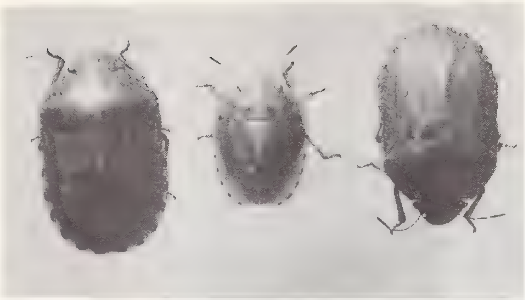
TEMPERATURE: Temperatures averaged below normal from the Pacific Ocean to the western edges of the northern and central Great Plains. Colorado was warm early in the week but cold the latter part, averaging a few degrees below normal. The cold air reached New Mexico late in the week causing Saturday's maximums to be 20° to 30° lower than Friday's. A large area from eastern Washington to the Continental Divide and southward to central Nevada averaged 9° to 12° colder than normal. Temperatures over the East warmed, continuing the mild trend that has persisted for several weeks over the Northeast. Much of the East averaged 4° to 6° above normal. Temperatures in the 30's occurred early in the week as far south as Kentucky but gradual warming during the week pushed maximums into the 80's and 90's over much of the Southeast by the weekend. Jacksonville, Florida, registered 95° on Sunday afternoon. (Summary supplied by Environmental Data Service, ESSA.)

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARKANSAS																								
Hope 4/11-17				25							7							14						
Kelso 4/11-17				7							1									33				
FLORIDA																								
Gainesville 4/13-18			BL	3					21		1					2		1	1	1	1			
Monticello 4/11-18			2BL	16			5			1								22		33				
Sanford 4/8-12			BL	16					50	4	10								17	16			11	
*Sanford 4/7-12			BL	12					30	2	4								4	4			95	
INDIANA																								
Bedford 4/10-17				10														10		54				
Johnson 4/10-17																		5		11				
KANSAS (County)																								
Riley 4/13,16,18				1				31			1							9		5				
MISSISSIPPI																								
Stoneville 4/13-19	46-84	0.30	2BL	20			6		4		2							35	46	255			3	
MISSOURI																								
Fair Grove 4/10-17				8														3		51				
Portageville 4/6-12				1														104		74				
Portageville 4/13-19				21														83		533				
TEXAS																								
Brownsville 4/13-19	65-87	trace	2BL	21			62		9	10					8	3		18	8	24			23	
Waco 4/13-19			BL	23					49		15							81	12	121	14		87	

*Attractant added for male cabbage looper.

LOOK FOR THESE IN SMALL GRAINS

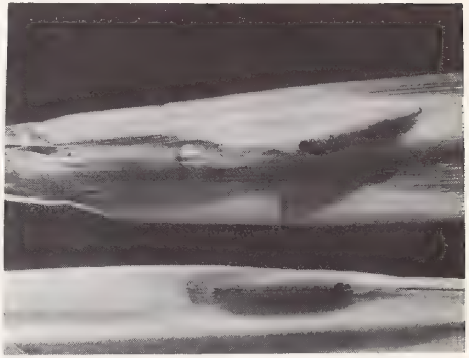


Senn Pest Look for an oval, tan to brownish stink bug on heads or stems of small grains. Margins of adult abdomen have alternating dark and light areas. This insect can be easily seen but often drops quickly to the ground when disturbed. Can be taken readily in a sweep net. Often congregates under windrows of straw or other collections of debris.

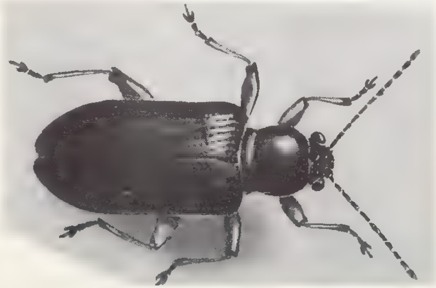
Hosts include wheat, barley, rye, oats, millet, sorghum, spurge, sunflower, flax, clover, and thistle. This pentatomid occurs in Afghanistan, Crete, Greece, Iran, Cyprus, Iraq, Israel, Jordan, Lebanon, West Pakistan, Syria, Turkey, and USSR (southern). Eurygaster integriceps Puton is one of the most destructive pests of grain in the Middle East. Adults feed on stems of young plants and adults and nymphs damage kernels. Entire wheat crops may be destroyed; yield is often reduced 25 percent or more. Senn pest also affects quality of flour and germination. Heavy damage has been reported from areas of USSR. For more details see CEIR 7(5):88.

Cereal Leaf Miner Yellowed or brown patches in grain fields may be indicative of presence of Syringopais temperatella (Led.). This lepidopterous miner feeds within the leaves, leaving the epidermis transparent. Larvae are about 5 mm. in length when full grown, and grayish yellow in color. Wing expanse of moth is from 12-18 mm. Forewings are brown, thorax and abdomen black.

Wheat, barley, and oats are preferred hosts. The pest occurs in Cyprus, Turkey, Lebanon, Syria, Jordan, Iraq, Israel, and Iran. Larvae mine leaves from November to April; may kill entire plantings. Major pest of cereals in Middle East; annual loss in Jordan 15-20 percent; 20-25 percent in Turkey; severe losses reported from other areas. As many as 60-90 larvae per plant have been reported in Iran. For more details see CEIR 9(38):873.



Senn pest and cereal leaf miner are not known to occur in the United States.



Cereal Leaf Beetle Presence of this introduced pest in grain fields may be first apparent from a streaked appearance of the leaves. In heavy infestations, plants appear yellowish white. Adults of Oulema melanopus (L.) are approximately 5 mm. in length. Wing covers and head are metallic, bluish black. Legs and thorax light reddish brown. Larva is a little longer than adult. It is yellowish, with brownish black legs. Coloring is obscured by a covering of fecal matter. Adults may be taken in sweep nets on warm spring days.

This chrysomelid attacks small grains and other grasses. Distribution includes Tunisia, Turkey, Cyprus, Israel, Iran, Morocco, and Europe east to Siberia. Also occurs in a small area of U.S. and has been reported in Canada. Serious damage to small grains has been reported in areas of Europe, and in areas of Michigan where the insect was discovered in 1962. The pest now occurs in wide areas of Michigan, Indiana, and Ohio; also reported from 6 counties in Illinois and 4 counties in Pennsylvania. A cooperative State and Federal control program is in operation against the pest.

USDA Coop. Econ. Ins. Rpt. 18(17):342, 1968

1967 CEREAL LEAF BEETLE INFESTATION AND OATS CROP LOSS SURVEY 1/

M. Curtis Wilson 2/

and

Robert E. Treece 3/

The first survey designed to estimate the extent cereal leaf beetle populations have built up and the extent of loss from these infestations was conducted in late June, 1967. Background research for the survey by Shade (1), Treece, Wilson and Shade (2), and Wilson, Shade, Treece and Stivers (3) was reported at the annual meetings of the Entomological Society of America at New York in December. Treece et al. (1) describe the survey technique employed to obtain the data reported here.

The losses in this report appear quite low considering the amount of concern over the pest since its introduction. However, these results should not be interpreted to indicate that the cereal leaf beetle is not a serious problem in the States involved. This survey shows the loss that occurred after all control measures had been applied. Neither the cost of these control measures, nor the value of crops saved by controls is taken into account.

Prior to 1967 the regulatory agencies of Indiana, Michigan and the U.S. Department of Agriculture applied intensive suppression programs. As a result a high dollar loss was not expected. Populations, however, were higher and more extensive than were expected in 1967, indicating a rather rapid buildup by the pest.

This survey is based entirely on foliage consumption by the cereal leaf beetle larva and is made after 95 percent of the larvae have gone into pupation. The survey is accomplished by sampling fields for larval feeding and estimating the percent of the foliage consumed. The results of research showed that (in the case of oats) 20.29 percent of the leaf surface was consumed for each population increment of one larva per stem. These were used as a basis to estimate the field population surviving to pupation. Life table research by Shade (1) in Indiana shows that mortality from the egg stage to pupation may be as high as 80 percent. Thus, an estimate of the total potential infestation prior to mortality in the field could be five-fold for the population levels shown in Table 1. Since it is the surviving population that causes loss in yield and will be the threat to the 1968 crop, this is the population which will be discussed here.

Research by Wilson et al. (3) shows a loss in yield of oats of 2.24 bushels per acre for each increment in the infestation level of one larva per stem. This factor was used to calculate the losses shown in Tables 3 and 4. The factor may change due to variation in soil type, fertility, rainfall, management, etc. At present, it appears to be a reasonable factor to use based on effective farm management and good growing conditions.

The acreage of oats both in Michigan and Indiana has been decreasing for several years. Estimates of the 1967 acreage, used in this report, were obtained from

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1/ Completed through the cooperative assistance of the following offices: John Favinger, State Entomologist, Indianapolis, Indiana; Kenneth Kruse, John Hayward, and C. N. Shepeard, U.S. Department of Agriculture, Plant Pest Control Division

2/ Purdue University, Lafayette, Indiana

3/ Ohio Agricultural Research and Development Center, Wooster, Ohio the Statistical Reporting Service. Oats acreage was estimated by C. A. Hines to be 81 percent of 1966 in Michigan and by Robert Straszheim to be 71 percent of 1966 in Indiana.

At the present time the cereal leaf beetle is found damaging wheat only under conditions of extremely high infestation near the point of introduction. Within 10 miles of the initial infestation area at Galien, Michigan, infestations in winter wheat dwindle to trace levels. The survey was not conducted in winter wheat beyond a distance of 20 miles from the Galien, Michigan - New Carlisle, Indiana area since levels of infestation were too low for detection.

We believe that this survey gives the most reliable estimate of infestation and loss due to the cereal leaf beetle to date. It shows the general buildup in infestation that has occurred eastward since the pest was first found in 1962. Although populations have not reached levels of economic significance in Ohio, the trend which shows fields located 180 miles from the initial infestation point having 62 percent of the stems infested, is of the utmost importance. This points out that infestations are well established and it would appear to be only a matter of a few years before they attain sufficient size to cause real economic loss. The development of infestations to the southwest continues at a very low rate.

Losses are becoming significant in both Michigan and Indiana as shown in Tables 2 and 3. Heretofore, most loss has been confined to four adjoining counties of the two States. Now, outwardly spreading populations are building up and causing loss. Much of this loss is real to the grower, but because of the low cash value of oats, the cost of control would be too great to be economically feasible below infestation levels of 2 larvae per stem.

Literature Cited

(1) Shade, R. E. A partial life table for the cereal leaf beetle in Indiana. Ent. Soc. Amer. Ann. (in preparation).

(2) Treece, R. E., Wilson, M. C. and Shade, R. E. Population buildup of the cereal leaf beetle in the Mid-West. J. Econ. Ent. (in preparation).

(3) Wilson, M. C., Shade, R. E., Treece, R. E. and Stivers, R. K. The correlation of cereal leaf beetle larval populations, leaf feeding, and yields of oats. J. Econ. Ent. (in preparation).

Table 1.

Estimated Infestation of Oats by the Cereal Leaf Beetle Based on Larval Feeding Survey, June 1967

INDIANA

County	Percent Stems Infested Range	 Average	Larvae/100 Stems 1/ Range	 Average
St. Joseph	47-100	87.8	20-446	104.90
La Porte	12-100	79.6	.7-447	84.60
Lagrange	88-90	89.0	30-41	36.73
De Kalb	80-91	85.3	30-46	36.05
Elkhart	32-95	71.5	2-76	30.35
Delaware	36-70	47.8	4-22	11.50
Whitley	24-49	34.8	4-27	11.05
Kosciusko	1-55	28.6	.02-31	10.48
Marshall	4-83	33.3	.2-23	7.65
Fulton	43-66	56.0	5-9	6.78
Starke	11-73	37.7	1.2-14	5.52
Wabash	27-50	28.6	1-6	2.98
Henry	5-27	16.8	.4-6	2.58
Porter	1-39	13.0	06-6	2.07
Allen	3-25	16.0	.1-5	2.04
Cass	1-6	2.5	.5-3	1.87
Jasper	6-26	13.3	.8-2	1.67
Grant	3-25	12.0	.01-4	1.15
Adams	3-10	5.7	0.3-2	.87
Wayne	2-4	3.0	0.2-2	.63
Pulaski	2-23	11.3	0.1-0.9	.53
Union	1-1	1.0	0.2-0.3	.25
White	0-2	0.8	0-0.4	.11
Lake	0-2	0.5	0-0.2	.05
Newton	0-2	0.7	0-0.05	.01
Benton	0-1	0.3	0-0.04	.01
Carroll	0-2	0.5	0-0.05	.01
Fayette	0	0	0	0

1/ Percent stems infested times the number of larvae per infested stem.

Table 1. (cont'd)

MICHIGAN

County	Percent Stems Infested Range	Percent Stems Infested Average	Larvae/100 Stems Range	Larvae/100 Stems Average
Berrien	16-100	79.2	1-434	88.60
Calhoun	20-100	72.9	2-234	49.34
Allegan	11-100	73.0	1-36	24.14
Cass	32-93	68.2	4-75	22.68
Ionia	95-100	98.0	11-33	18.73
Kalamazoo	67-93	82.3	8-25	17.65
Barry	71-95	85.3	9-25	16.80
Hillsdale	79-90	84.7	7-25	12.68
Van Buren	30-96	64.5	6-29	12.73
St. Joseph	60-84	74.0	9-19	12.43
Ingham	24-81	54.3	4-18	8.85
Genesee	7-76	30.2	0.3-19.8	5.71
Ottawa	32-61	50.5	1-8	5.45
Eaton	3-52	36.8	0.8-8	4.03
Branch	17-26	19.8	1-7	3.63
Kent	39	39.0	4.8	4.80
Lenawee	44-74	56.3	3-9	4.68
Muskegon	31	31	3.7	3.70
Newaygo	9-14	11.5	0.1-2	1.03
Oceana	2-6	4.5	0.1-1	0.50
Gratiot	1-17	9.5	0.02-0.6	0.36
Montcalm	1-15	9.3	0.02-0.9	0.49
Lapeer	3-7	5.0	0.07-0.3	0.18
Mecosta	1-8	4.8	0.01-0.6	0.16
Midland	0-3	1.3	0.02-0.2	0.07

OHIO

County	Percent Stems Infested Range	Percent Stems Infested Average	Larvae/100 Stems Range	Larvae/100 Stems Average
Williams	84-94	89.3	7-9	7.65
Hancock	49-75	62.0	3-9	5.35
Defiance	7-71	31.8	0.3-13	4.08
Shelby	22-36	34.0	2-7	3.70
Henry	11-41	27.8	0.5-3	1.70
Mercer	2-11	7.5	0.3-0.7	0.43

Table 1. (cont'd)

ILLINOIS

County	Percent Stems Infested Range	Average	Larvae/100 Stems Range	Average
Iroquois	0-1	0.5	0-0.2	0.01
Kankakee	0	0	0	0
Will	0	0	0	0

Table 2.

Estimated 1967 Loss to Oats Due to Infestation by the Cereal Leaf Beetle in Indiana

County	Acreage [1]	Bu. Loss [2] Per Acre	Total	$ [3]
St. Joseph	3124	2.35	7341	4772
La Porte	3266	1.90	6205	4033
Lagrange	8591	0.82	7045	4579
De Kalb	5964	0.81	4831	3140
Elkhart	6461	0.68	4393	2855
Delaware	4544	0.26	1181	768
Whitley	6248	0.25	1562	1015
Kosciusko	5325	0.23	1225	796
Marshall	3834	0.17	652	424
Fulton	2485	0.15	166	108
Starke	781	0.12	43	28
Total	50,623		34,644	$22,518

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[1] Acreage reported by R. Straszheim, Statistical Reporting Service, to be 71 percent of 1966.

[2] Loss estimated at 2.24 bushels per larva per stem. These estimates do not take into account the cost of control measures nor the value of crops saved.

[3] Monetary value calculated at 65¢ per bushel.

Table 3.

Estimated 1967 Loss to Oats Due to Infestation by the Cereal Leaf Beetle in Michigan

County	Acreage 1/	Bu. Loss 2/ Per Acre	Bu. Loss 2/ Total	$ 3/
Berrien	3240	1.98	6415	4169
Calhoun	12555	1.10	13810	8977
Allegan	9720	0.54	5248	3411
Cass	5670	0.51	2892	1880
Ionia	12150	0.42	5103	3317
Kalamazoo	9720	0.40	3888	2527
Barry	9720	0.38	3694	2401
St. Joseph	4860	0.28	1361	885
Hillsdale	11745	0.28	3289	2138
Van Buren	4050	0.28	1134	737
Ingham	8910	0.20	1782	1158
Ottawa	8100	0.12	972	632
Total	100,440		49,588	$32,232

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[1] Acreage reported by C. A. Hines, Statistical Reporting Service, to be 81 percent of 1966.

[2] Loss estimated at 2.24 bushels per larva per stem. These estimates do not take into account the cost of control measures nor the value of crops saved.

[3] Monetary value calculated at 65¢ per bushel.

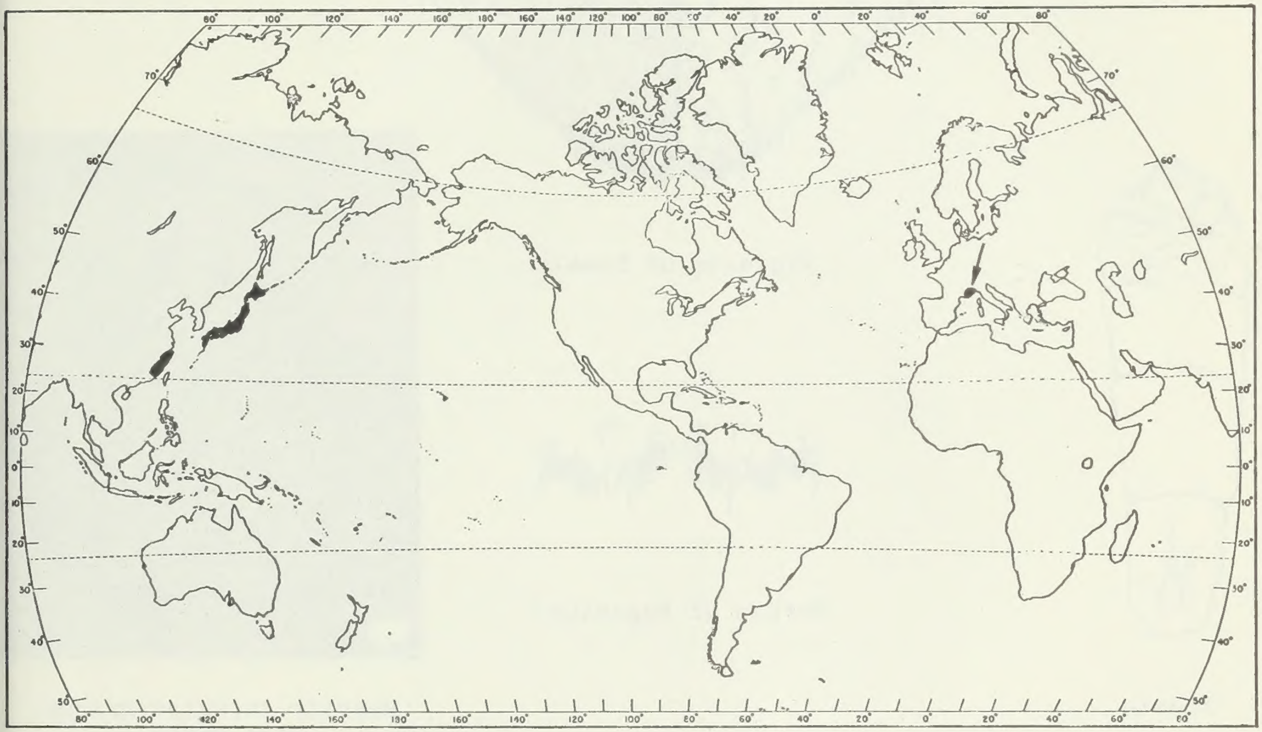
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

ARROWHEAD SCALE (*Unaspis yanonensis* (Kuwana))

Economic Importance: The species, also called yanone scale, is one of the most injurious scale insects of citrus in Japan. Many trees have been killed by it in the Nagasaki area of Japan and large parts of infested groves have been seriously infested. Even at a distance, infested trees may be recognized because of the large masses of white male cocoons on the foliage. Females are usually seen on the twigs and small branches as well as the fruit. Although the scale was described in *Chionaspis* in 1923, it was known in *Prontaspis* from that year until 1949.

Distribution: China (citrus areas of the southeast mainland), France (Côte d'Azur), and Japan.

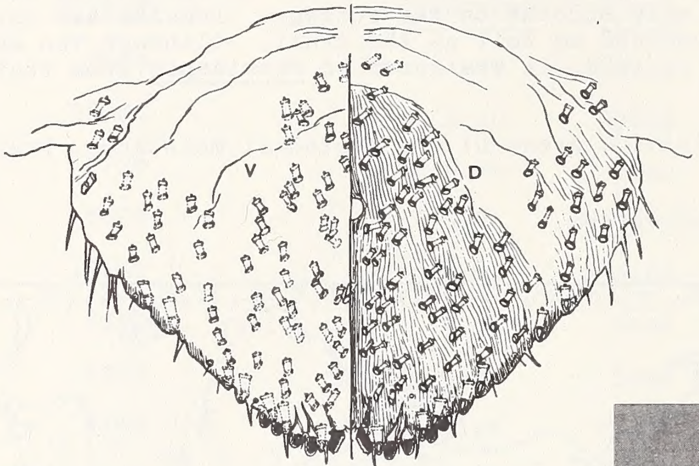
Hosts: Many species of citrus.



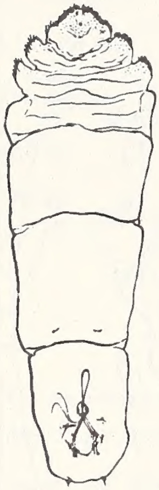
General Distribution of *Unaspis yanonensis* (Kuwana)

Life History and Habits: Under conditions in Japan, females and sometimes male pupae have been known to hibernate. Females are ovoviviparous and each may produce about 140 nymphs in the first generation, 170 in the second and 40 in the third. The nymphs of the first generation appear about mid-May in the north and a second nymphal peak takes place about 10-15 days later. In southern Japan, nymphs of the first generation occur approximately one month earlier. At temperatures of 68° F., development of first stage nymphs requires nearly 25 days and the second stage about 18 days. First generation nymphs may be found up to August, whereas those of the second and third are present almost to November. Three generations a year occur in Japan.

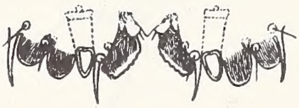
Description: ADULT - Female scale cover - Length 2.84-3.56 mm. Elongate, darkish brown with a gray margin, exuviae pale yellow. Sides slope away from central ridge. Body - Elongate with distinct segments; heavily chitinized. Pygidium - Large, with three pairs of well developed lobes; median lobes also largest and slightly sunken into pygidium. Anus circular, closer to base than apex of pygidium. Dorsal gland orifices numerous and variable in number. Male scale cover - Length about 1 mm. Elongate with sides nearly parallel, white and with three ridges.



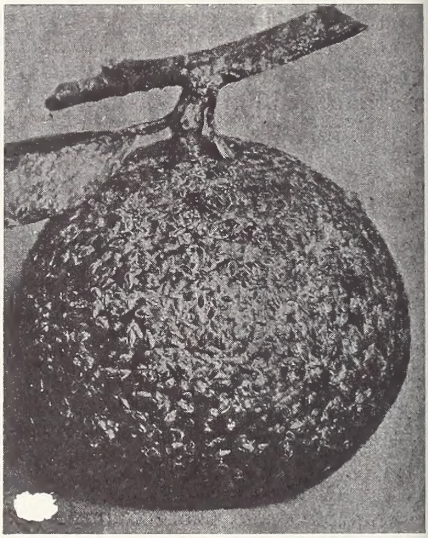
Pygidium of Female



Female



Margin of Pygidium



Heavily Infested Orange
USDA Photo

Selected References: 1. Clausen, C. P. 1927. U.S. Dept. Agr. Tech. Bul. 15, 15 pp. 2. Kuwana, I. 1926. The Diaspine Coccidae of Japan, IV. Jap. Imperial Plant Quar. Serv. Tech. Bul. 4, 44 pp. 3. Nakayama, S. 1968. Personal communication. 4. Nishino, M., Furuhashi, K. and Matsunaga, Y. 1965. Shizuoka Pref. Citrus Expt. Sta. Bul. 5:69-93. 5. Ohgushi, R. and Nishino, T. 1966. Jap. J. Appl. Ent. and Zool. 10(1):7-16. 6. Takezawa, H. and Aihara, J. 1962. Jap. J. Appl. Ent. and Zool. 6(3):208-215.

Illustrations of female and pygidium from Kuwana

Prepared in Survey and Detection
Operations in cooperation with other
ARS agencies.

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
18(17):349-350, 1968

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